

## Two New Species in *Marcgravia* (Marcgraviaceae) from Central and Adjacent South America

Stefan Dressler

Rijksherbarium/Hortus Botanicus, P.O. Box 9514, NL-2300 RA Leiden, The Netherlands

**ABSTRACT.** Two species are described as new: *Marcgravia panamensis* (subg. *Orthothalamium-Pauciflorae*), a new species from Panama, is the only species of the genus having leaves with dotted abaxial surfaces but only a few erect flowers per inflorescence. *Marcgravia roonii* (subg. *Orthothalamium-Multiflorae*), a new species from Costa Rica, Colombia, and Ecuador, has the typical leaves of *M. nervosa* but a completely different inflorescence structure. *Marcgravia membranacea* is considered to be a synonym of *M. nervosa*.

Studies toward a revision of the Central American species of the type genus from the Marcgraviaceae revealed two new species from this area, with one also ranging in the northwestern part of South America. One of the new species is (so far known) a rare endemic collected on several sites along the road from El Llano to Carti (Province Panamá) and on the Continental Divide in Comarca de San Blas of Panama. The other is also rare, in wet rainforests, but has a wider range: known from Costa Rica, Panama, Colombia, and Ecuador. This taxon was already annotated as new by A. C. de Roon, Utrecht, who agreed in choosing another name for it. Both species are described here in order to make the names available for a treatment in a forthcoming volume of *Flora Mesoamericana*, where a complete account of the family will be given (Dressler & collaborators, in prep.). The features that distinguish them from the taxa treated in the *Flora of Panama* (de Roon, 1970) are to be found in the remarks section of the respective species.

The generic delimitation of Wittmack (1878) is still commonly accepted, but it is not very satisfactory. Some of his entities are obviously artificial groups and rather formally derived "containers" (e.g., tribes *Pauciflorae* and *Multiflorae* of subg. *Orthothalamium* to which the new species should be assigned). Nevertheless these "groups" are of good diagnostic value. A revision of the entire genus, which presumably will result in proposing a more natural generic delimitation, is intended by the author.

***Marcgravia panamensis*** S. Dressler, sp. nov.

**TYPE:** Panama. Prov. Panamá: along El Llano-Carti road, 16–18.5 km N of Pan-Am Hwy. at El Llano, 400–450 m, 28 Mar. 1974, *Nee & Tyson 11001* (holotype, NY; isotype, MO). Figure 1.

Haec species ad subg. *Orthothalamium* pertinet; folia coriacea venatione obscura infra punctis nigris glandulosis, inflorescentiae pauci-(8–13)flores non rotate expansae, in medio nectariis 2–3 distincta pedicellatis. *Marcgraviae serrae* de Roon affinis glandularum hypophyllarum basilaminarium praesentia laminarium absentia differt.

Woody liana; fertile branches terete to quadrangular, grayish to reddish brown, with only few small (max. 1.3 × 0.7 mm), inconspicuous, darker, circular to elongate lenticels, scattered or in rows. Adult leaves distinctly petiolate (3–9 mm), petiole 1.5–2 mm diam., stoutly semi- to subterete, canaliculate above; blade elliptical, sometimes slightly asymmetrical, apically acuminate, acumen up to 20 mm long, basally attenuate to acute, 50–135 mm long, 15–45 mm wide, margin entire, in sicco coriaceous, midrib sulcate above, prominent beneath, lateral veins obsolete; hypophyllous glands—submarginal: small (diam. up to 0.4 mm), solid, circular, dark glands near the margin, not visible from above, 2–4 mm distance in between; basilaminar: one raised, round to oval, poriform gland in the lower third of the blade, often relatively far from base, up to 1 mm diam., sometimes perforation not distinguishable; laminar: lower surface punctated with scattered solid dark minute (up to 0.2 mm diam.) round glands; juvenile leaves broadly ovate, basally cordate, sparsely punctate beneath. Inflorescences erect, roughish, shortly pedunculate (1–2 cm) with only 8–13 fertile and 2–3 sterile flowers (nectaries), the few flowers conspicuously oblique inserting at the rachis, hence not horizontally spreading like the spokes of a wheel, the rachis shortly conical, 5–8 mm long, 4–5 mm diam.; nectaries yellow-green, pitcher- or sac-shaped, terminally not or slightly testiform, distinctly stalked, free stalk 4–8(–10) mm long, 1–1.3 mm diam., terete, only few and tiny, inconspicuous lenticels, often bent downward, the cup tubular, clavate, sub-

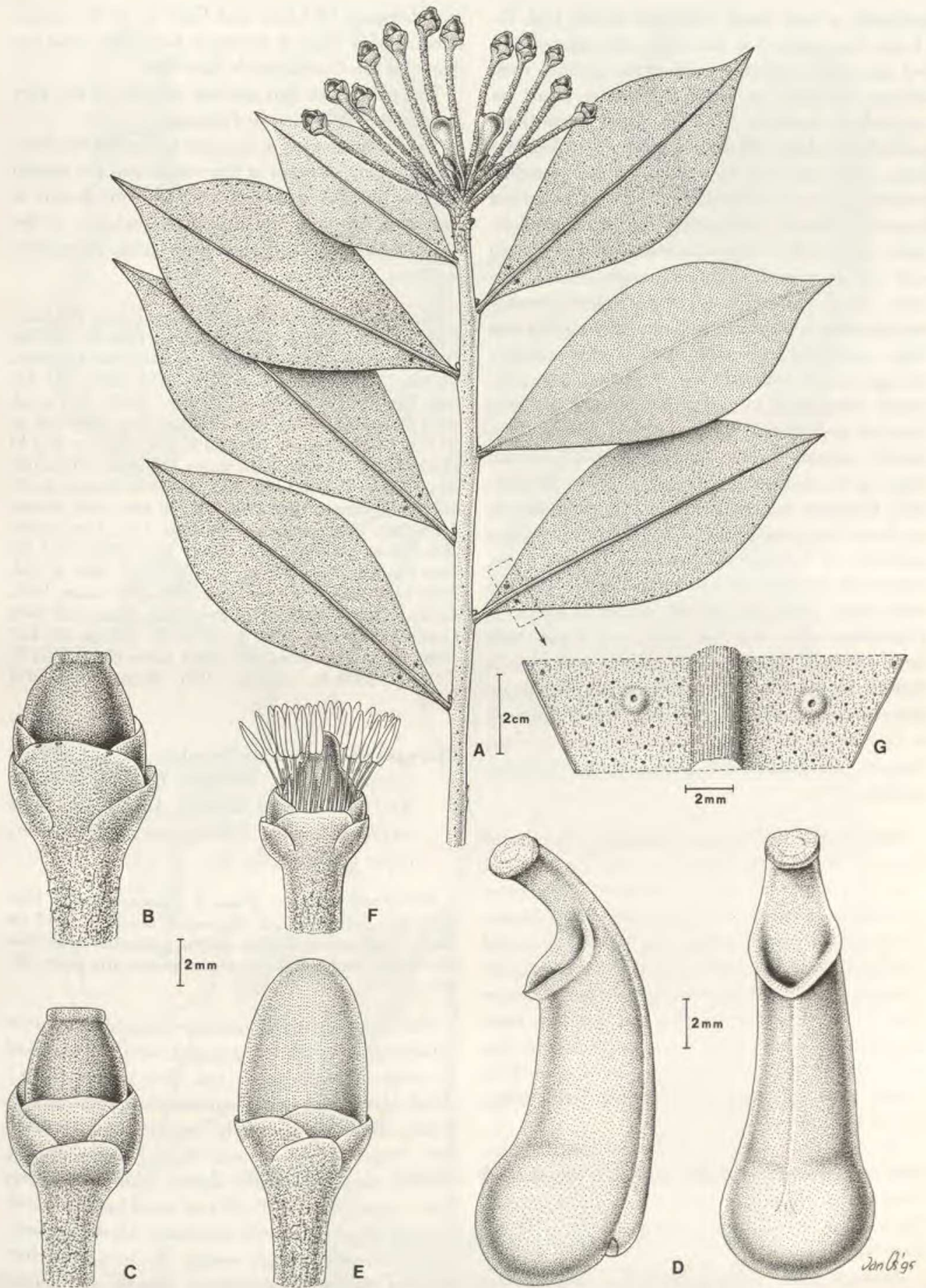


Figure 1. *Marcgravia panamensis* S. Dressler. —A. Flowering branch. —B, C. Flower (after anthesis). —D. Nectaries. —E. Flower (before anthesis). —F. Flower (in anthesis). —G. Detail of abaxial leaf surface showing the basal laminar and the scattered laminar glands. A–E, Liesner 1146 (US); F, Nee & Tyson 11001 (NY).

terminally a very small, indistinct sterile bud, 8–14 mm long, up to 5–6 mm diam., the inflated part 3–4 mm diam., orifice ascending the pedicel, limb oblique, slightly protruding. Flowers erect on roughish to lepidote, inconspicuously lenticellate pedicels, the latter 28–45 mm long, (1–)1.5–2 mm diam., with small (up to 0.2 mm diam.), roundish lenticels, better developed when fruiting; 2 sepaloïd bracteoles directly subtending the calyx, semicircular to broadly triangular-ovate, subcoriaceous with entire, slightly thinned margin, 2–2.5 mm wide, up to 1.5 mm long; sepals equal, broadly semicircular to reniform, 4–5 mm wide, 2–2.3 mm long, subcoriaceous with entire, only slightly thinned margin with very few dark glandular spots, sepals adpressed to outspread; corolla in vivo greenish to greenish brown, narrow ovoidal with slightly asymmetrical obtuse apex, (6–)7–10 mm long, up to (4–)5–6 mm diam.; stamens 38 (30–40?), filaments in vivo pale green, linear, flattened, ca. 3 mm long prior to anthesis, ca. 6 mm long after anthesis, ca. 0.5 mm wide, anthers in vivo white, linear with obtuse apex, ca. 2 mm long, ca. 0.8 mm wide; ovary globose, apically narrowed into a ca. 1-mm-long style, 3–4 mm diam., ca. 4 mm high (incl. style), 8 locules (7–9?), stigma umbonate to crateriform, ca. 1.5 mm diam. Fruit (depressed) globose, apically umbonate, roughish, ribbed (locules), 6–10 mm diam., 6–9 mm high, style 0.5–1.5 mm long, ca. 1.5–2 mm diam., calyx (adpressed to) outspread.

Superficially this species resembles *Marcgravia serrae* de Roon from Costa Rica and Panama and could be confused with it. However, *Marcgravia panamensis* is clearly distinguishable by its depauperate inflorescences having only 8–13 flowers and usually 2 nectaries, which places it in Wittmack's category *Pauciflorae* of subgenus *Orthothalamium* Delpino. The leaves are smaller and have only basilar glands but no laminar ones (except the tiny solid glands) and are coriaceous in sicco without visible lateral venation. Nevertheless, both species are closely related.

**Distribution.** Endemic to the Cordillera de San Blas in Panama. So far this species is only known from several localities along the road between El Llano (Province Panamá) and Carti-Tupile (Province San Blas).

**Ecology.** Wet primary rainforest, 200–760 m altitude, rare.

**Remarks.** According to present knowledge *Marcgravia panamensis* is confined to Panamá and San Blas Provinces only. There are thirteen collections known to me, and all were collected along the

road between El Llano and Carti or in the mountains nearby. Thus it seems to be a rare local endemic of the Cordillera de San Blas.

The epithet for this species alludes to the very restricted distribution in Panama.

The inflorescence is unusual in having the flowers obliquely inserted at the rachis and not spread radially like the spokes of a wheel. This feature is known to me only from the rare endemic of the Cocos Island *M. waferi* Standley (subg. *Plagiothalamium*).

**Paratypes.** PANAMA. **Prov. Panamá:** along El Llano–Carti road, 6 mi. from Pan-Am Hwy., 1200 ft., 10 May 1979, *Hammel 7344* (MO); 11 km from Pan-Am Hwy., 350 m, 13 Apr. 1975, *Mori et al. 5595* (MO); 12.7 km from Pan-Am Hwy., 350 m, 15 Feb. 1975, *Mori et al. 4679* (MO, US); 14 km from Pan-Am Hwy., 200–500 m, 20 Feb. 1973, *Kennedy 2506* (MO, US); 15.5 km N of El Llano, 400 m, 13 Feb. 1973, *Busey 360* (AAU, MO); from 12 mi. above Pan-Am Hwy. to Continental Divide, 26–27 Mar. 1973, *Liesner 1146* (MO, US), 30 Mar. 1973, *Liesner 1326* (MO, US); continental divide to 1 mi. from divide, 300–500 m, 30 Mar. 1973, *Liesner 1277* (MO); 20.7 km from Pan-Am Hwy., 350 m, 20 Mar. 1975, *Mori & Kallunki 5121* (MO, US); near top of Cerro Jefe, 1 Jan. 1972, *Gentry & Dwyer 3449* (MO). **Prov. San Blas:** trail along Continental Divide, 9°20'N, 78°56'W, 400 m, 23 July 1986, *Mc Donagh et al. 305* (BM); Cerro Habú, 9°23'N, 78°49'W, 2500 ft., 19 Dec. 1980, *Sytsma et al. 2691* (MO).

**Marcgravia roonii** S. Dressler, sp. nov. TYPE: Colombia. Dept. El Valle: Río Digua Valley, Río Blanco, 600 m, 2–5 Apr. 1939, *Killip 34790* (holotype, BM; isotype, US not seen, photo in U). Figure 2.

*Marcgraviae nervosae* Triana & Planchon similis, foliis maioribus, inflorescentiis aliquantum latioribus 8–15 cm diam., magis rotatis floribus erectis, pedicellis longioribus 30–50 mm longis, staminibus pluribus, ovario glabro difert.

Robust woody liana, ultimate branchlets terete to quadrangular, slightly zigzagged, with few scattered inconspicuous lenticels (ca. 0.5–1 mm diam.). Adult leaves very large; petioles stout, semi- to subterete, abaxially distinctly canaliculate, (3–)6–17 mm long, (2.5–)3–5 mm diam.; blade oblong, slightly obovate, apically shortly acuminate, rarely only acute, acumen 15–25 mm long, basally rounded to acute, very shortly attenuate, 18–46 cm long, 6–17 cm wide, margin entire, in sicco thin chartaceous (to membranaceous), midrib and lateral veins slightly prominent to obscure from above, prominent and mostly hirsute from beneath, lower surface of leaves shortly hirsute to glabrous; hypophyllous glands small, mostly inconspicuous and hardly visible with the naked eye, marginal: minute

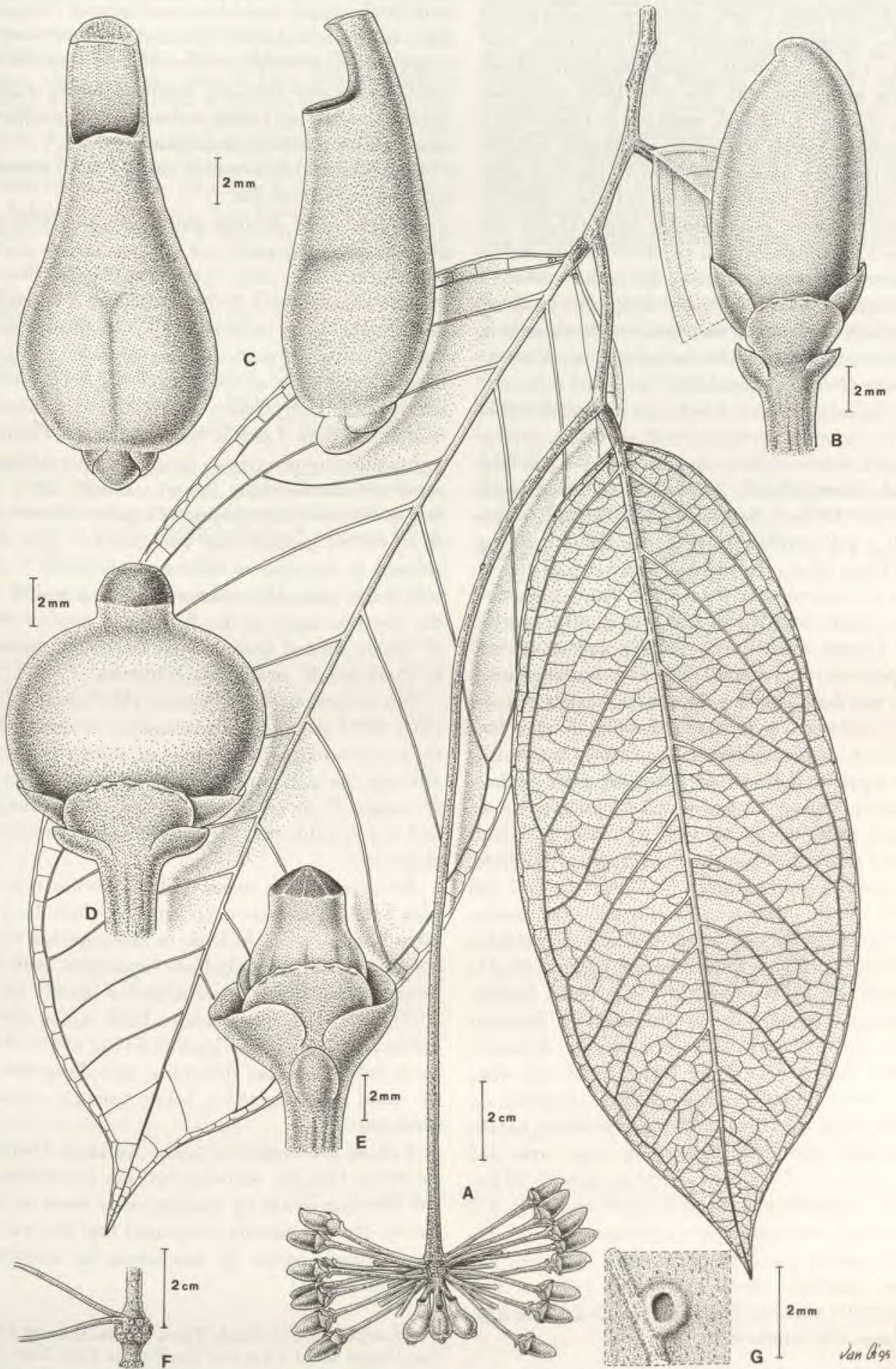


Figure 2. *Marcgravia roonii* S. Dressler. —A. Flowering branch. —B. Flower (before anthesis). —C. Nectaries. —D. Young fruit. —E. Flower (after anthesis). —F. Rachis. Note the interstice between the scars of flower pedicels and nectaries. —G. Basilaminar hypophyllous gland. A–C, F, G, Killip 34790 (BM); D, Játiva & Epling 1073 (S); E, Játiva & Epling 535 (S).

(ca. 0.5 mm diam.), dark, solid, semicircular glands in the margin; basilaminar: 1 conspicuous, oval (max. 1.2 × 1.6 mm), raised crateriform gland, mostly associated with the most basal secondary vein; laminar: 5–12 oval, small (up to 1 mm diam.), crateriform glands with large perforation submarginal from the base to the apex of the leaf, often inconspicuous; juvenile leaves not seen. Inflorescences pendent on relatively long (15–20 cm) peduncles, roughish, with ca. 30–70 fertile and 6–10 sterile flowers (nectaries), the rachis extremely contracted, globose, 8–16 mm diam., with an apical extension (insertion of the nectaries, 3–4 mm long, 4–6 mm diam.) sometimes separated by a short interstice (2–3 mm long), hence the fertile flowers all in a horizontal wheel of 8–15 cm diam., subtended by the nectaries; nectaries small, urceolate, pitcher-shaped, shortly stalked, the free stalk 4–5 mm long, nearly terete, slightly lenticellate outside, the cup tubular, clavate, often terminally testiform, terminally a well-developed sterile bud, 13–19 mm long, 8–11 mm diam., the inflated part 3–4 mm, the orifice not ascending to the pedicel, the opening narrow, margin slightly widened with an acute abaxial lip. Flowers erect (rarely slightly arched upward) on pedicels, the latter 30–50(–59 in fruit) mm long, 1–3 mm diam., lepidote to roughish, rarely hirsute, with scattered conspicuous protruding elongate lenticels (1 × 2 mm); bracteoles directly subtending the sepals to 1–3 mm set apart, sepaloid, semicircular to obtusely triangular, 2.5–3 mm long, ca. 2–5 mm wide, margin thinned with dark glandular spots; sepals (sub)equal, semicircular to reniform, outspread from the corolla, ca. 4 mm long, 5–7 mm wide, margin entire with conspicuous dark glands, gnawed while fruiting; corolla cylindrical-ovoid to ovoidal, apically slightly asymmetrically conical to obtuse, 10–13 mm long, 5–7 mm diam. basally; stamens numerous (ca. 93 counted), the filaments long linear to very narrowly triangular, flattened, before flowering ca. 8 mm long, ca. 0.5 mm wide, the anthers yellowish white, narrowly triangular, ca. 2 mm long, ca. 1 mm wide; ovary pyriform, basally globose, apically contracted into stout style, 4–5 mm diam., 6–7 mm high including style, 9–10 locules, longitudinally striated, glabrous, style 1–2 mm long, terminating into a conspicuous mammiform stigma, 1.5–2 mm diam. Fruit depressed globose, roughish, 10–13 mm diam., 7–9 mm high, apiculate, style ca. 2 mm diam., 1.5–2.5 mm high, subapically contracted.

*Marcgravia roonii* is easily identified by its very large chartaceous leaves (the largest in the genus known to me) which may be hirsute beneath (at

least at the veins) and show a prominent venation but a rather inconspicuous glandular pattern; large, long-peduncled, whorled inflorescences with lots of erect flowers and only few, small nectaries; a globose contracted rachis and a glabrous pyriform ovary with a conspicuous stigma.

*Distribution.* Known from Costa Rica, Panama, Colombia, and Ecuador.

*Ecology.* Wet primary rainforest, 50–1600 m altitude, obviously rare.

*Remarks.* This new species resembles *Marcgravia nervosa* Triana & Planchon but it is easily distinguishable by having huge leaves, many erect flowers (subg. *Orthothalamium*–*Multiflorae*) and lacking the bristles on the ovary. Being vegetatively very similar both species are doubtlessly closely related and form a pair of species that has evolved in two different directions: their diverging inflorescence structures (many flowers, (nearly) erect on long pedicels vs. few flowers obliquely inserted on short, curved pedicels) are very likely to have developed in response to different pollinators. I observed the same phenomenon (differing mainly in the insertion angle of the flowers) in another pair of closely related species from Brazil: *M. comosa* K. Presl and *M. eichleriana* Wittmack.

Two collections from Panama (*McPherson* 6793 (MO), 8093 (MO)) show intermediate features with their more strongly bent flowers on shorter pedicels, although the high number of flowers places them in *M. roonii*. Their inflorescences are still premature and it is possible that they may develop the typical shape later.

Both *Marcgravia roonii* and *M. nervosa* require high humidity and occur in very wet virgin forests, often beside rivers. At least in Mesoamerica there seems to exist an altitudinal separation, with *M. nervosa* occurring at lower altitudes (mostly up to 1100 m) than *M. roonii* (above 1000 m) (an observation also made by B. Hammel, in litt. 1995). With more collections this difference may disappear as *M. roonii* was collected in South America on lower altitudes.

I chose the epithet to honor Adrianus Cornelis de Roon, Utrecht, who enriched our knowledge of the Marcgraviaceae by working many years on this family. He had already recognized that this was an undescribed species by annotating the collection selected as type.

*Paratypes.* COSTA RICA. **Prov. Punta Arenas:** Finca Las Cruces about 5 km S of San Vito de Java, *Utley* 10A (MO). **Prov. Limón:** Cantón de Limón, Cerro Muchilla, Fila Matama, Cordillera de Talamanca, 850 m, 9°47'40"N, 83°06'30"W, 8 Apr. 1989, *Robles & Chacón* 2714 (MO). PANAMA. **Prov. Bocas del Toro:** on gravel road

branching N from main Fortuna Dam–Chiriquí Grande road, 1.1 mi. from junction, 1200 m, 8°45'N, 82°15'W, 11 Mar. 1985, *McPherson* 6793 (MO), 1150 m, 18 Jan. 1986, *McPherson* 8093 (MO). **Prov. Chiriquí:** Fortuna Dam region, above northern edge of lake, 1100 m, 8°45'N, 82°15'W, 27 Apr. 1986, *McPherson* 9072 (MO), 8 Feb. 1987, *McPherson* 10418 (MO), 1400–1600 m, 15 Sep. 1977, *Folsom et al.* 5603 (MO); La Fortuna Hydroelectric Project, S side of river, 20 Mar. 1978, *Hammel* 2043 (MO); Cerro Pinola, 15 Mar. 1981, *Hörn & Gordon* 200 (MO); a 1.5 km de campamento Bijao-Fortuna, 20 Mar. 1976, *Mendoza J. Mendieta II & Mayo* 276 (MO). ECUADOR. **Prov. Pichincha:** Río Toachi near Santo Domingo, 700 m, 18 July 1963, *Játiva & Epling* 535 (S). **Prov. Esmeraldas:** Río Pambil, Estero Pena Lisa, 50 m, 5 July 1966, *Játiva & Epling* 1073 (S).

*Marcgravia nervosa* Triana & Planchon, *Ann. Sci. Nat. Bot.*, 4. Sér. 17: 363. 1862 TYPE: Colombia, *Triana s.n.* (holotype, P; isotype, P).

*Marcgravia membranacea* Standley, *Publ. Field Mus. Nat. Hist., Bot. Ser.* 18: 697. 1937. Syn. nov. TYPE: Costa Rica. Prov. Cartago: near Pejivalle, 900 m, *Standley & Valerio* 47089 (holotype, F not seen; isotype, US).

*Marcgravia membranacea* Standley differs from

*M. nervosa* Triana & Planchon only in having glabrous abaxial leaf surfaces. As I could not find other separating features I consider them to be conspecific, especially because the density of the indumentum of *M. nervosa* is variable. The lower leaf surface indumentum in *M. roonii*, the most closely related species, also ranges from hirsute to glabrous. There is no evidence that this variation is confined to a certain area; on the contrary, one can find both types growing in the same place.

*Acknowledgments.* It is a pleasure to thank Ad de Roon, who gave his advice and the permission to use his name. I am most grateful to Jan H. van Os for preparing the beautiful and instructive drawings and Jan Frits Veldkamp for helping with the Latin diagnoses.

#### Literature Cited

- Roon, A. C. de. 1970. Family 121. Marcgraviaceae. In: R. E. Woodson & R. W. Schery et al., *Flora of Panama*. *Ann. Missouri Bot. Gard.* 57: 29–50.
- Wittmack, L. 1878. Marcgraviaceae. In: C. F. P. Martius, *Flora brasiliensis*, Vol. 12(1): 213–258. München, Wien, Leipzig.